

ARTHROPODS IN BURMESE AMBER.

BY T. D. A. COCKERELL,

University of Colorado, Boulder, Colorado.

A study of a considerable quantity of Burmese amber, additional to that previously reported on, reveals a remarkably interesting fauna. Hymenoptera are represented by Bethyridæ, which are abundant, though often fragmentary; Evaniidæ of several genera, and a *Trigonalys*. A very thorough examination fails to reveal a single ant. Hemiptera (Heteroptera) are represented by two genera and four species of Enicocephalidæ. There are some Homoptera, not yet closely examined. The Diptera include Empididæ, *Sciara*, Psychodidæ (*Trichomyia*), and a Cecidomyiid. The Coleoptera include Elateridæ, Dermestidæ, Rhipiphoridæ, Ipidæ, and others not yet studied; but no Carabidæ or Paussidæ. There are many Blattids, young or fragmentary in every case; Termites are also frequent, but probably of few species. The mites are numerous and varied, but usually in poor condition for description; no spiders have yet been found. The Diplopods are represented by Polyxenus, and there is a good Pseudoscorpion, representing an apparently extinct genus. There is a very good Lepismatid, referred rather doubtfully to *Lampropholis*. The present paper puts on record a number of these discoveries. The amber (Burmite) was found in clay of Miocene age, but was derived from elsewhere, and may be much older. The specimens have been presented by Mr. R. C. J. Swinhoe of Mandalay to the British Museum. All the species described below were in a single large lump of amber, and therefore lived at the same time and place.

PSELAPHOGNATHA.

Polyxenus burmiticus sp. nov. (Polyxenidæ).

Length about 2400 microns; antennæ about 320; width of head about 560; longest lateral bristles about 560 microns long, longest caudal bristles about 720. Apparently sixteen pairs of legs. Antennæ apparently 7-jointed, counting a very minute and rather doubtful apical joint; fifth joint longest; first, second, fourth and

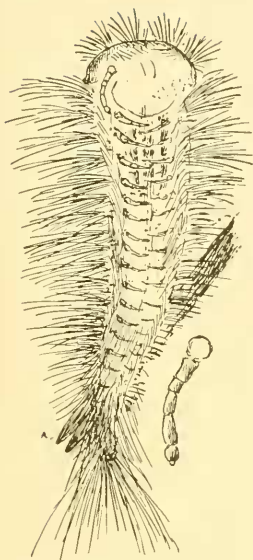


Fig. 1. *Polyxenus burmiticus*.

sixth subequal; third shorter. Bristles exceedingly abundant and long, dark fuscous.

Burmese amber, from R. C. J. Swinhoe; in the same piece as *Electrofœnus gracilipes*, about 30 mm. from it. This appears to be a true *Polyxenus*, but it is remarkable for the very long and copious bristles. The species described by Koch and Berendt from Baltic amber have short bristles, and are entirely different. Our animal is curiously like an Anthrenid larva, and on account of its long bristles resembles the much more ancient *Palæocampa* from the Pennsylvanian of Illinois. The structure figured at A, which I at first took for a pair of caudal appendages, is evidently the end of a piece of vegetable débris which appears on the other side.

ACARINA.

Cheyletus burmiticus sp. nov. (Cheyletidæ).

Length about 736 microns; shining reddish-brown, with very little hair; mandibles ordinary; palpi extremely stout, strongly elbowed at base; claw well-formed, curved, on left palpus, but the right one appears minutely bidentate at end; thumb-papillæ lengthened, long and slender, ribbon-like, but not pectinate; legs as usual in the genus, so far as can be seen; abdomen broadly rounded posteriorly. The following measurements are in microns: length of palpus about 208; second joint of anterior leg about 160, the third about 120; last joint of second leg about 160.

Burmese amber, from R. C. J. Swinhoe. In the same slab as the type of *Winnertziola burmitica*, and 3 mm. from it; also 6

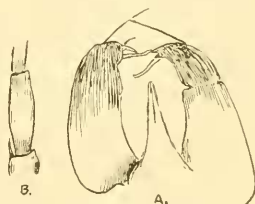


Fig. 2. *Cheyletus burmiticus*. A, palpi; B, base of first leg.

mm. from the type of *Scleroderma quadridentatum*. Although I cannot make out any palpal combs, the animal is evidently not a *Cheyletiella*.

DIPTERA.

Winnertziola burmitica sp. nov. (Cecidomyiidae).

♀. Piceous, including legs and antennæ; wings clear, nervures ferruginous; surface of wings not conspicuously hairy, margin with long hairs; thorax narrow; abdomen long and narrow, the caudal appendages long and slender; venation as usual in the genus, the cross-vein not very oblique; antennæ apparently 11-jointed, but there is doubtless a second basal joint not seen, making 12 in all; antennal joints with long hairs, but no circumfili, whether with sur-

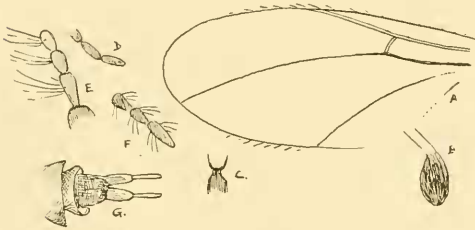


Fig. 3. *Winnertziola burmitica*. A, wing; B, halter; C, claws; D, palpus; E, basal part of antenna; F, end of antenna; G, caudal appendages.

face markings cannot be determined; the three joints before the last broader basally than apically; palpi large, apparently 3-jointed, but there is probably a small basal joint not seen, joint before the last not appreciably shorter than

the last; tarsi with 5 joints, basal joint very short, second long; claws small, apparently simple, emporium so small that it cannot be clearly made out; halteres very large, the large club dark brown. The following measurements are in microns: total length about 1760; length of wing about 1120; length of antennæ apparently about 400, but they are seen obliquely, and are probably about 480; last joint of palpus 57; width of club of halter 64; length of hind femur 400; hind tarsal joints (1) 64, (2) 240, (3) 112, (4) 80, (5) 64.

Burmese amber, from R. C. J. Swinhoe; in the same slab as the type of *Enicocephalus swinhoei*, and 10 mm. from it. This may possibly be separable from *Winnertziola* on account of the long caudal appendages, the form of the palpi, the probably simple claws, etc., but some of these differences are doubtful, and the others are slight, so a separate genus hardly seems to be required. The allied genus *Winnertzia* is known from Baltic amber.

COLEOPTERA.

Dermestes larvalis sp. nov. (Dermestidæ).

A minute larva, about 750 microns long (not counting hairs); head, legs and hairs ferruginous; apical half of mandibles piceous, exactly as in modern *Anthrenus* larvæ; body covered with spinulose



Fig. 4. *Dermestes larvalis* n. sp. A, hind leg; B, apical end of front leg; C, mandible; D, hair.

hairs, the dorsal ones very long and abundant, not tufted; longest hair from vicinity of head about 960 microns; caudal end with extraordinarily long hairs, the longest 3200 microns, not forming a distinct tuft; legs as in modern *Anthrenus* larvæ, with single sharp claw; femora with short hairs, tibiæ with bristles, hind tibiæ with small spines. The hind legs are about 320 microns long. The body is without corneous plates.

Burmese amber, from R. C. J. Swinhoe. In same slab as type of *Cryphalites rugosissimus*, and 33.5 mm. from it. The characters are exactly those of modern Dermestid larvæ, but the generic reference is of course not precise. The long hairs suggest *Dermestes* rather than some of the other common genera. Evidently the museum curator and entomologist, had they existed in Tertiary times, would have been troubled by Dermestids as they are today.

HYMENOPTERA.

Scleroderma (?) *quadridentatum* sp. nov. (Bethyloidæ).

♀. Apterous. Head and thorax 1.7 mm. long; abdomen beyond first segment missing, but total length was probably about 3.5 mm.: head and thorax black, legs and abdomen ferruginous; antennæ pale ferruginous at base, the flagellum darker; mandibles ferruginous, at least 3-dentate, the outer margin strongly and evenly curved; antennæ 10-jointed, the scape extremely large and thick, fully twice as wide at apex as the next joint; head subquadrate,

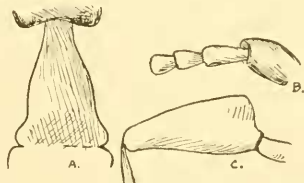


Fig. 5. *Scleroderma quadridentatum*. A, prothorax; B, base of antenna; C, hind femur.

narrowed and truncate posteriorly; eyes large and prominent; prothorax long, narrowly conical in outline, but the sides bulging, the whole thorax very long and narrow; metathorax posteriorly at sides with short but distinct teeth, four in all; anterior femora with upper margin concave, lower convex; hind femora very broad, cuneiform, the large end basad, the basal upper corner very prominent, obtusely rectangular; abdomen with a slender petiole, but rapidly widening, as in living forms. Hind tibiae with a single long spur. The following measurements are in microns: greatest width of head 440; length of eyes 224; width of thorax in middle 368; width first abdominal segment 592.

Burmese amber, from R. C. J. Swinhoe. In the same slab as the type of *Winnertziola burmitica*, and 7.5 mm. from it. The specimen shows the ventral view, and the palpi are not visible, so the generic reference may be somewhat doubtful. The insert is, however, of this immediate alliance, and the relatively large laterally placed eyes indicate a more primitive type than typical living *Scleroderma*. Species of this genus (*S. tuberculata* Magr. and *S. luteicolle* Kieff.) are known in the existing fauna of Burma. The great antiquity of the genus is indicated by the fact that although the females are wingless, species occur on the most remote islands; the Hawaiian Is. (many species), Guam, the Seychelles and St. Helena.

Apenesia electriphila sp. nov. (Bethyloidæ).

♂. Length about 2.5 mm.; black or piceous; wings clear, with light ferruginous stigma and nervures, venation typical for genus, stigma large, marginal cell open at end. Mandibles bidentate, the

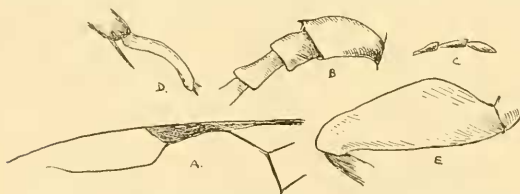


Fig. 6. *Apenesia electriphila*. A, stigma and adjacent parts; B, base of antenna; C, labial palpus; D, anterior basitarsus; E, posterior femur.

teeth stout; labial palpi 3-jointed; antennae apparently 12-jointed, but turned down at ends, and possibly only 11-jointed; scape broad and flattened, curved;

flagellar joints short and broad, antennal joints 2-7 longer than broad, 8-10 as broad as long; head broad, occipital margin sharp; eyes rather large, prominent, about 144 microns long; width of head